## Remarks

Claims 1-3, 11, 24-28, 34, 40, 46, 49-51, 53, 57, 59, and 62-75 are pending in the application. Claims 1-3, 11, 24-28, 34, 40, 46, 49, 51, 53, 57, 59, and 62 have been withdrawn. Claim 50 has been amended. Claims 64-75 have been newly added. Support for the amendment to claim 50 can be found in the preamble of the claim itself, as well as in the specification on page 80, lines 26-29. Support for newly added claim 64 can be found on page 80, lines 30-32. Support for newly added claim 65 can be found on page 5, lines 9-10. Support for newly added claim 66 can be found on page 10, line 2. Support for newly added claim 67 can be found on page 5, line 16. Support for newly added claim 68 can be found on page 6, line 16. Support for newly added claim 69 can be found on page 10, lines 3-6. Support for newly added claims 70-72 can be found on page 10, lines 29-30. Support for newly added claim 73 can be found on page 14, lines 5-8. Support for newly added claims 74 and 75 can be found on page 34, lines 9-11, page 58, lines 22-23, page 63, lines 15-17, and page 82, lines 15-17, for example. It is believed no new matter is added by these amendments.

## Information Disclosure Statement

The Office Action states that information disclosure statement filed 12 December 2005 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because References A17-A19 recite Genbank accession numbers without indicating the date the sequences were deposited in the databanks. According to the Office Action, the databanks are constantly being updated; thus the sequences are not unambiguously identified. Applicants respectfully disagree,

since each Accession Number is unique. However, in an effort to expedite prosecution, applicants have re-submitted an IDS in which accession numbers are coupled with their corresponding dates of submission. Applicants respectfully request consideration of these references.

**Claim Rejections – 35 USC § 112, second paragraph**

Claim 50 has been rejected under 35 U.S.C. 112, second paragraph, because allegedly, claim 50 is an incomplete method claim. The Office Action states that the claim should include enough information to clearly and accurately describe the invention and how it is to be practiced. Applicants have amended the claim to describe the invention and how it is to be practiced. Applicants respectfully request withdrawal of this rejection.

**Claim Rejections – 35 USC § 112, first paragraph**

Claim 50 has been rejected under 35 U.S.C. 112, first paragraph, because the specification, while enabled for a method of *in vitro* administration of a Nup153 inhibitor to a cell, allegedly does not reasonably provide enablement for a method of *in vivo* administration to a cell.

Applicants teach that the disclosed Nup153 inhibitors possess key activities *in vitro* that are associated with inhibition of cell cycle progression *in vivo*. It was well established in the art that cell cycle progression can be stopped *in vivo* in order to inhibit the growth of cancer, for example. For example, the specification teaches that, "The protein strands that reach from one

end of the cell to the other are called microtubules. These proteins are assembled and disassembled during the cell division process. They are the target of several different chemotherapy agents. For example, Taxol®, a chemical derived from an extract of the yew tree, binds to the microtubules and does not allow them to disassemble. This causes the cells to fail in the mitosis process and die." (Specification, page 6, lines 7-12). One of ordinary skill in the art would have known that a wide variety of compounds exist that have been shown to inhibit cell cycle progression *in vivo*, and that the Nup153 inhibitors disclosed herein would have also been able to halt cell cycle progression *in vivo*.

The Office Action alleges that it is well known in the art that the development and administration of pharmaceutical therapies are unpredictable. Applicant notes that there is no requirement that the claimed method be actually demonstrated, much less that the breadth of the claimed method be demonstrated. Applicant submits that the lack of an actual demonstration of the present method *in vivo* cannot by itself be dispositive of whether the method will not work. According to the MPEP, if a statement of utility in the specification contains within it a connotation of how to use, and/or the art recognizes that standard modes of administration are known and contemplated, 35 U.S.C. 112 is satisfied. *In re Johnson*, 282 F.2d 370, 373, 127 USPQ 216, 219 (CCPA 1960); *In re Hitchings*, 342 F.2d 80, 87, 144 USPQ 637, 643 (CCPA 1965). See also *In re Brana*, 51 F.2d 1560, 1566, 34 USPQ2d 1437, 1441 (Fed. Cir. 1993).

The MPEP goes on to state that it is not necessary to specify the dosage or method of use if it is known to one skilled in the art that such information could be obtained without undue

experimentation. If one skilled in the art, based on knowledge of compounds having similar physiological or biological activity, would be able to discern an appropriate dosage or method of use without undue experimentation, this would be sufficient to satisfy 35 U.S.C. 112, first paragraph. See also MPEP § 2107.01 and § 2107.03. This is clearly the case with the Nup153 inhibitors disclosed herein, where it was recognized in the art that cell cycle inhibition was useful in treating cancer. One of skill in the art would have been able to determine dosages and routes of administration for various inhibitors of Nup153, which could have readily been identified by those of skill in the art.

Furthermore, the Federal Circuit has repeatedly held that "the specification must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation'." *In re Wright*, 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993). Nevertheless, not everything necessary to practice the invention need be disclosed. In fact, what is well-known is best omitted. *In re Buchner*, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991). All that is necessary is that one skilled in the art be able to practice the claimed invention, given the level of knowledge and skill in the art. Further the scope of enablement must only bear a "reasonable correlation" to the scope of the claims. See, e.g., *In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970).

Additionally, the standard for making a rejection based on 35 U.S.C. § 112, first paragraph is articulated in *In re Wands*, 858 F.2d 731 (Fed. Cir. 1988) (see also MPEP § 2164.01 and 2164.04). Initially, the Patent Office must accept the objective truth of statements made in

the specification. If such statements are to be called into question, the Patent Office is burdened with providing evidence or convincing argument why those of skill in the art would doubt the statements (*In re Marzocchi*, 439 F.2d 220, 169 USPQ 367 (CCPA 1971)). Applicant asserts that this burden has not been met. The Office Action provides no evidence or convincing argument, as required, that the method of claim 50 could not be used *in vivo* as described in the specification. The Office Action asserts that due to the unpredictability of developing pharmaceutical therapies and the unpredictability of transferring nucleic acids into an organism's cell, undue experimentation would be necessary. However, as applicants pointed out above, there are multiple cell cycle inhibition therapies currently on the market which are effective in treating cancer, and applicants venture to assert that all, or nearly all, of these treatments were first tested *in vitro*, as is standard practice in the art. Thus, no proper *prima facie* case for lack of enablement has been established. On this basis alone the rejection should fail.

For all of these reasons applicant submits that no proper prima facie case for lack of enablement has been established for claim 50, and newly added claims 64-75. Thus, applicant believes that claims 50 and 64-75 are adequately enabled and respectfully request withdrawal of this rejection.

Claim 50 was rejected under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to reasonably

convey to one skilled in the art that the inventor had possession of the claimed invention. Applicants respectfully traverse this rejection.

The Office action indicates that, "while the claims are directed to a Nup153 inhibitor, the Applicant has identified the composition to be administered only by description of a function, the ability to inhibit Nup153. However, the inhibitor is not further described by any common structural characteristics."

According to the MPEP, Section 2163, "Possession may be shown in a variety of ways including...describing distinguishing identifying characteristics sufficient to show that the applicant was in possession of the claimed invention. See, e.g., *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 68, 119 S.Ct. 304, 312, 48 USPQ2d 1641, 1647 (1998); *Eli Lilly*, 119 F.3d at 1568, 43 USPQ2d at 1406; *Amgen, Inc. v. Chugai Pharmaceutical*, 927 F.2d 1200, 1206, 18 USPQ2d 1016, 1021 (Fed. Cir. 1991)." Applicants submit this requirement has been met by the present written description found in the specification. As set out above, possession can be shown by describing distinguishing identifying characteristics. Such characteristics are clearly laid out in the claims, as the product must inhibit Nup153. For at least this reason, this basis of rejection is misapplied to the present claims.

The Office Action also states that, "To provide adequate written description and evidence of possession, the specification must provide sufficient distinguishing identifying characteristics. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making

the claimed product, or any combination thereof." Applicants assert that they meet this requirement for written description.

*Disclosure of complete or partial structure:* The specification teaches the full length sequence of Nup153. Because the full length protein and nucleic acid sequence of Nup153 is provided, fragments thereof are provided as a matter of course, and as disclosed in the specification, these fragments can be used as inhibitors of Nup153.

*Physical and/or chemical properties:* As discussed above, the physical characteristic of the Nup153 inhibitor is that it is an inhibitor, which is clearly a physical characteristic, and inhibition is defined in the specification as, "...disrupting the cell so that it does not proceed through the stages of cell division." (Page 81, lines 2-5).

*Functional characteristics:* All of the claims recite a functional characteristic for Nup153 inhibitors, which again, is their ability to inhibit Nup153. Therefore, the inhibitors satisfy the written description requirement of functional characteristic.

*Structure/function correlation:* Since the function of the inhibitors is given in the specification and claims (inhibiting Nup153), and the sequence of the full-length Nup153 was given, one of skill in the art would have known that the function inhibitors would have been related to the structure of Nup153, which is known. Furthermore, one of ordinary skill in the art could have easily determined which inhibitors had the functional characteristic of interacting with Nup153.

*Methods of making the claimed product:* The instant specification teaches the following on page 28, bridging page 29: "Disclosed are processes for making the compositions as well as making the intermediates leading to the compositions." The specification goes on to describe various ways to make nucleic acids, proteins, and antibodies that can be used as Nup153 inhibitors.

Therefore, the specification not only describes that fragments can be used, it describes how they can be obtained (via PCR technique together with specific sets of primers chosen to represent particular portions of the protein).

Furthermore, as the Office Action pointed out, the written description requirement is separate from the enablement requirement. It appears that the Examiner is asking for a description of *how* to use the invention. All that is required to meet the standard of written description is that the specification contains a written description of the claimed invention, which burden applicants have clearly met, as outlined above. However, applicants assert that they have also met the enablement requirement. It is routine to one of skill in the art to make inhibitors of a known protein. Furthermore, based on Applicant's discovery and the teachings of the specification, one of skill in the art would recognize the routine nature of assessing the ability of inhibiting Nup153. The steps for assessing such activity are clearly taught in the specification. Thus, Applicants believe that methods of inhibiting the cell cycle of a cell is described in the specification, such that one of skill in the art would recognize that Applicants were in possession

of the invention as claimed. Therefore, applicants respectfully request withdrawal of this rejection.

For all of the above reasons, Applicants submit that no proper *prima facie* case of lack of written description has been established. Applicants therefore respectfully request the withdrawal of this rejection.

**Claim Rejections – 35 USC § 102**

Claim 50 has been rejected under 35 U.S.C. 102(e) for allegedly being anticipated by Shah et al (1998. Current Biology 8:1376-1386). The Office Action states that the term "A method of inhibiting a cell cycle" is given minimal patentable weight since it is found only in the preamble. Applicants respectfully disagree, however, in an effort to expedite prosecution, applicants have amended the claim to recite, "...wherein the Nup153 inhibitor inhibits the cell cycle of the cell" in the body of the claim itself.

Shah et al. neither teach nor suggest that Nup153 inhibitors can inhibit the cell cycle. In fact, Shah et al. only shows evidence that Nup153 can act as an inhibitor of NLS-mediated import of importin $\beta$. According to the MPEP, section 2131, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9

USPQ2d 1913, 1920 (Fed. Cir. 1989). Therefore, applicants respectfully request withdrawal of this rejection.

Favorable consideration of claims 50 and 64-75 is earnestly solicited.

Pursuant to the above amendments and remarks, reconsideration and allowance of the pending application is believed to be warranted. The Examiner is invited and encouraged to directly contact the undersigned if such contact may enhance the efficient prosecution of this application to issue.

A credit card payment submitted via EFS Web in the amount of $230.00, representing the fee for a small entity under 37 C.F.R. § 1.17(a)(2) and a Request for Extension of Time are enclosed. This amount is believed to be correct; however, the Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 14-0629.

Respectfully submitted,

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